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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Tsuyoshi Aruga

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP

901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

HARM, NICKOLAS R

ART UNIT

PAPER NUMBER

1791

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,131	Applicant(s) ARUGA ET AL.	
	Examiner NICKOLAS HARM	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Summary

1. Claims 11-18 are present and have been fully considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
5. Claims 11, 12, and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over RHEE (US 3,555,666) in view of COUTEAU et al. (US 6,326,313).
 - a. Regarding claim 11, RHEE teaches a jig that holds two objects together, which is two holding members and a pressurizing mechanism (col. 4, lines 24-

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27). RHEE teaches a treatment chamber (col. 4, lines 6-7). COUTEAU teaches a treatment chamber with a supply mechanism and discharge mechanism (col. 4, lines 25-43). It would have been obvious to one of ordinary skill in the art at the time of the invention to add COUTEAU's supply and discharge mechanisms to RHEE's treatment chamber because such mechanisms would allow for ease of replacement of the treatment liquid, the concentration of the treatment liquid in the treatment chamber will dilute as it reacts with the objects to be bonded, and one of ordinary skill in the art would want to expose each pair of objects to be bound to a treatment liquid of consistent concentration. While neither RHEE nor COUTEAU explicitly teaches that the liquid supplying mechanism supplies treatment liquid to the treatment chamber when the two objects to be bonded are held apart from each other, the liquid supplying mechanism taught by COUTEAU is capable of supplying liquid to the chamber when the objects are held apart from each other.

b. Regarding claim 12, RHEE teaches that the objects to be bonded are precisely aligned and that the jig maintains the objects' alignment (col. 4, lines 24-27).

c. Regarding claim 14, RHEE teaches supply and drain mechanisms that are used in the process of cleaning the objects to be bonded (col. 4, lines 35-43).

6. Claim 13 rejected under 35 U.S.C. 103(a) as being unpatentable over RHEE and COUTEAU as applied to claim 11 above, and further in view of KELLOGG et al. (US 5,883,361) and STUEBER et al. (US 2002/0105875).

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d. Regarding claim 13, KELLOGG teaches a first head member (col. 4, line 25; fig. 2, #31) and second head member (col. 4, line 9; fig. 2, #25) that, respectively, supports a first holding member (fig. 3, #35; fig. 2, #55a and #61a) and a second holding member (fig. 2, #50, #55b, and #61b). KELLOGG teaches a first chamber wall supported by the first head member and arranged to surround the first holding member (col. 4, lines 32-33; fig. 3, #36) and a second chamber wall arranged to surround the second object to be bonded (fig. 2, #21a and #21b). While KELLOGG teaches that the floor (fig. 2, #25) supports both the base of the second holding member (fig. 2, #50) and the second chamber wall (fig. 2, #21a and #21b), affixing the second chamber wall to the base of the second holding member so that the second holding member supports the second chamber wall would be an obvious design choice for one of ordinary skill in the art at the time of the invention (MPEP 2144.04). KELLOGG teaches that the first and second chamber walls are attached to one another (fig. 2), so it would have been obvious to one of ordinary skill in the art at the time of the invention that a sealing member exists between the two or is unnecessary in light of the fact that they are directly connected. KELLOGG teaches a seal member between the first holding member and the first chamber wall (col. 4, lines 38-51). STUBER teaches the desirability in a diffusion bonding process of maintaining the surfaces to be diffusion bonded free of oxides (para. 12). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of KELLOGG with that of the references as combined because they

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are analogous arts and it would be desirable to one of ordinary skill in the art to clean and bond the objects to be bonded in the same chamber in order to reduce contact with oxygen that can occur during transport between a treatment chamber and a bonding chamber.

7. Claims 15-16 rejected under 35 U.S.C. 103(a) as being unpatentable over RHEE and COUTEAU as applied to claim 11 above, and further in view of GRUTTA et al. (US 2003/0175520).

e. Regarding claim 15, the references as combined teach that the objects to be bonded are held by holding members and heated, but not that heat is applied to the objects to be bonded via heating mechanisms that are driven to contact the holding members. GRUTTA teaches bonding a plurality of objects (para. 23) by placing the objects between two holding members (para. 25) and a driving mechanism passes the objects and holding members between top and bottom rollers (para. 35; fig. 4) that abut the holding members and then are separated from the holding members as the holding members and objects are passed through the rollers, wherein the rollers pass energy to the holding members to heat the objects to be bonded (para. 26, 35). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the mechanism of conductive heat transfer taught by GRUTTA to heat the objects to be bonded instead of heating the entire chamber as taught by the references as combined, because of increased efficiency of not heating the entire chamber and the

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reduced wear on the chamber inherent in repetitive heating and cooling of the entire chamber.

f. Regarding claim 16, GRUTTA teaches that the rollers transfer energy to the holding members in order to heat the objects to be bonded (para. 35) and that the rollers are heated by any suitable heating means (para. 26). It would have been obvious to one of ordinary skill in the art at the time of the invention that the rollers are capable of being heated to one temperature prior to contacting the holding members, and subsequently being heated to a different temperature.

8. Claim 17 rejected under 35 U.S.C. 103(a) as being unpatentable over RHEE and COUTEAU as applied to claim 11 above, and further in view of OHKUBO et al. (US 6,032,715).

g. Regarding claim 17, OHKUBO teaches a holding member that holds a substrate to be bonded in a removable manner by suction (col. 3, lines 20-24). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the holding member taught by OHKUBO as the holding member in the references as combined because vacuum holding plates are well known in the art and one of ordinary skill in the art would desire to hold the objects to be bonded on the holding plates without adhesive or clips that could interfere with the bonding process.

9. Claim 18 rejected under 35 U.S.C. 103(a) as being unpatentable over RHEE and COUTEAU as applied to claim 11 above, and further in view of MASIK (US 5,336,353).

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a. Regarding claim 18, MASIK teaches the use of cameras to align two objects to be bonded (col. 4, lines 1-5). It would have been obvious to one of ordinary skill in the art at the time of the invention to use cameras as taught by MASIK in the apparatus of the references as combined because the arts are analogous, visual inspection is a well-known way of determining whether objects are in alignment, and cameras are a known means of automatic visual inspection that is known in arts involving harsh environments, such as those with high temperatures and pressures like those of the references as combined, where a person cannot simply view the objects as they are bonded.

Response to Arguments

2. Applicant's arguments filed December 31, 2009 have been fully considered but they are not persuasive.

3. In response to applicant's argument that none of the prior art presented in the previous rejection recites the limitation that the treatment-liquid supplying mechanism supplies treatment-liquid into the treatment chamber when the first object to be bonded and the second object to be bonded are held apart from each other by the first holding member and the second holding member, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In this regard, the liquid supplying mechanism of COUTEAU is capable of supplying liquid

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to a treatment chamber during a variety of process conditions, including when two objects to be bonded are held apart from each other.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICKOLAS HARM whose telephone number is (571)270-7605. The examiner can normally be reached on Mon-Thurs, 7:30a-5:00p EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip Tucker can be reached on (571)272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NICKOLAS HARM/
Examiner, Art Unit 1791

/Mark A Osele/
Primary Examiner, Art Unit 1791
March 11, 2010